

Mediterranean Vessels: Fibonacci, Copernicus, and the Role of Arabic Manuscripts in the Transmission of Scientific Knowledge

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BACKGROUND: This article investigated two topics I long have wanted better to understand: the introduction and establishment of the Arabic numeral system for use in Europe, and the functioning of Arabic astronomical science in Copernicus' heliocentric theory. These are topics which are outside of the scope of my current book project, *Starry Nights: A Celestial History of Religion in the Mediterranean*. Although these topics are outside the scope of this book, they are nonetheless advantageously related to it and help to inform it. I envision the present paper connecting these topics as perhaps a journal article or chapter in an edited volume. Since many non-specialists and laypersons still are unaware of the connections discussed herein, and considering that this topic ultimately has afforded an opportunity to argue *for* Mediterranean Studies as a discipline and *against* erroneous historical notions of thoroughgoing separation and opposition between Europe and the Islamic world, I think that this work might find its best fit in a forum appropriate to both non-specialist and scholarly audiences. The research questions being discussed this fall at the Mediterranean Seminar might yield useful thoughts and suggestions on the same, and I would be happy to hear your suggestions. I also welcome suggestions for additional or contradictory research.

ABSTRACT: From “Fibonacci’s” *Liber abaci* (1202 CE) to Copernicus’ *De revolutionibus* (1543), crucial scientific ideas in the Western world are linked to Arabic mathematical and scientific knowledge and to Arabic manuscripts. What is more, both of these works are largely constitutive of foundational concepts—positional mathematics and heliocentricity—that often are associated with notions of ‘modernity’ in the wider West. Still unknown to many non-specialists in the West, however, the pivotal works of both of these thinkers are linked to Arabic mathematical and scientific knowledge and to Arabic manuscripts. The transmission of scientific knowledge between the 11th and 16th centuries CE (and earlier) via Arabic manuscripts, represented in very small measure by the examples herein, points to a continuity of scientific thought ranging from Antiquity through the Middle Ages and into the Renaissance—a continuity that moved across and between Arabic and European linguistic, cultural, and religious contexts that long have been (mis)understood as disconnected. Two instances (among many) of the transmission of scientific knowledge via Arabic manuscripts are examined in this paper: first, the popularization in Western Europe of the Hindu-Arabic system of numbers (ostensibly through the work of the person known to us today as “Fibonacci” and based on al-Khwārizmī’s 9th-century text “Algebra” as well as the work of other 9th-century Arabic mathematicians such as Abū Kāmil), and, second, Nicolaus Copernicus’ reliance on Arabic astronomical manuscripts (from 13th- and 14th-century astronomers of the Persian astronomical school known as the ‘Marāgha group’) in his development of critical planetary motion models. In both cases, Mediterranean geography, trade, and travel practices facilitated this flow of ideas.